REMARKS/ARGUMENTS

This amendment is responsive to the Office Action mailed August 17, 2006 wherein claims 1-24 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting; claims 1, 2, 4-9, and 14-24 were rejected under 35 USC §102(e) as being anticipated by Sfez (US2004/0099815); claim 3 was rejected under 35 USC §103(a) as being unpatentable over Agawa (US 6699192); claims 10-12 were rejected under 35 USC §103(a) as being unpatentable over Sfez in view of Nelson (US 6216540), and claim 13 was rejected under 35 USC §103(a) as being unpatentable over Sfez in view of Schmid (US 3182292). In this amendment, no new matter has been added.

In this amendment claims 1 and 15 have been amended to more clearly state the invention and claim 14 was canceled. Claims 1-13 and 15-24 remain pending in this application. Reconsideration in light of the following remarks is respectfully requested.

With regards to the provisional rejection of Claims 1-24 on the ground of nonstatutory obviousness-type double patenting, the owner, General Electric Company, owner of 100% interest in the instant application hereby disclaims the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full term of any patent granted on Pending Application Number 11/254266, filed on October 24, 2005, as such term is defined in 35 USC 154 and 173, as the term of any patent granted on said application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending application. A terminal disclaimer in accordance with 37 CFR 3.73(b) is filed concurrently with this response.

Claim 1 has been amended to more clearly recite the invention. Claim 1 now recites a method for localization of fluorescence in a scattering medium, the method comprising the steps of illuminating the scattering medium with an excitation light to excite the fluorescence modulating a portion of the emitted light from the fluorescence within the scattering medium using an ultrasonic pulse to induce an acoustic lens to generate a modulated optical (underlined text added as amendment) signal and detecting the modulated optical signal at a surface of the scattering medium. Support for the amendment can be found at for example paragraphs [0024], [0025], [0031] and [0032] of the instant specification.

The rejection of Claims 1, 2, 4-9, and 14-24 under 35 USC §102(e) in view of Sfez is respectfully traversed. Claim 14 has been canceled and therefore the rejection has been obviated. The present invention, as claimed in independent claims 1, 15, and 24 is patentable

over the Sfez reference and claims 2, 4-9, and 16-23 are patentable by dependency. "Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983).

The Sfez reference does not disclose each element of the present invention as claimed in independent claim 1. Specifically, the present invention claims method for localization of fluorescence in a scattering medium, the method comprising the steps of illuminating the scattering medium with an excitation light to excite the fluorescence, modulating a portion of the emitted light from the fluorescence within the scattering medium using an ultrasonic pulse to induce an acoustic lens to generate a modulated optical signal and detecting the modulated optical signal at a surface of the scattering medium (underlined text added as an amendment). The Sfez reference does not teach or suggest the recited excitation of light to excite fluorescence and modulating a portion of the emitted light from the fluorescence within the scattering medium using an ultrasonic pulse to induce an acoustic lens to generate a modulated optical signal. By contrast, the Sfez reference instead teaches the diffusion of laser light through a medium, the light then interacting with an ultrasound signal and being detected by a detector. Further, Sfez teaches the use of a fixed frequency and a modulated phase with regards to the modulation step. Nowhere does Sfez teach or disclose the use of an ultrasonic pulse to induce an acoustic lens to generate a modulated optical signal. Therefore, the present invention, as claimed in independent Claim 1 is not anticipated by the Sfez reference. Claims 2 and 4-9 depend directly or indirectly from claim 1, respectively. Accordingly, Applicants submit that claims 2 and 4-9 are allowable by dependency.

Claim 15 has been amended to more clearly recite Applicants invention. Support for the amendment can be found for example at paragraphs [0024], [0025], [0031], and [0032] of the instant specification.

With regards to independent claim 15, the Sfez reference does not disclose each element of the present invention. Claim 15 particularly claims a system for localization of fluorescence in a scattering medium comprising an excitation light source for illuminating the scattering medium, a fluorescent dye within a preselected region of the scattering medium for absorbing and emitting light in the NIR (near infrared) region of the light spectrum, an ultrasonic scanning system for generating ultrasonic pulses, wherein the ultrasonic pulses are configured to induce an acoustic lens to (underlined text added as amendment) modulate the emitted light from the fluorescent dye; and an optical detection system for detecting the modulated light. Nowhere does Sfez

recite, suggest or disclose the use of a fluorescent dye within a preselected region of a scattering medium for emitting light in the NIR region, nor does Sfez disclose an optical detection system. Alternatively, Sfez discloses, in paragraph [0161] with reference to FIG. 11, an absorption map that shows the presence of an absorbing agent. Furthermore, Sfez does not disclose that the agent should emit light at the NIR region for optical detection. Also, with regards to modulation, Sfez does not teach the use of an ultrasonic pulse to induce an acoustic lens to modulate the emitted light from the fluorescent dye. Therefore the present invention as claimed in independent claim 15 is not anticipated by the Sfez reference. Claims 16-23 depend directly or indirectly from claim 15. Accordingly, Applicants submit that claims 16-23 are patentable by dependency.

With regards to independent claim 24, the Sfez reference does not disclose each element of the present invention. Specifically, claim 24 claims an imaging system for localization of a preselected object in a scattering medium comprising an excitation light source for illuminating the scattering medium, a fluorescent dye injected into the preselected object for absorbing and emitting light in the NIR (near infrared) region of the light spectrum, an ultrasonic scanning system for generating ultrasonic pulses, wherein the ultrasonic pulses modulate the emitted light from the fluorescent dye, an optical detection system for detecting the modulated light and a data processing system acquiring the detected optical signal and generating a spatial distribution of the preselected object in the scattering medium based on the detected optical signals. Nowhere does Sfez disclose or suggest a data processing system applied to acquire an optical signal and generate a spatial distribution, and nowhere in the office action does Examiner provide a showing or teaching in the Sfez reference of a data processing system designed for that function. Furthermore, while Sfez does disclose an absorption map that shows the presence of an absorbing agent in a scattering medium in FIG. 11, Sfez does not disclose the system applied to generate a spatial distribution of a preselected object in a scattering medium based on the detected optical signal. Therefore, as stated above, the present invention, as claimed in Claims 1-2 and 4-9 and 15-24 are patentable over the Sfez reference. Thus, it is respectfully requested that the rejection of Claims 1-2 and 4-9 and 15-24 under 35 USC §102(e) be withdrawn.

Applicants respectfully traverse the rejection of claim 3 under 35 USC 103(a) over Sfez in view of Ogawa. Claim 3 depends from claim 1, wherein the modulating step is performed by an ultrasonically induced gradient of refractive index. While Ogawa does discloses the use of a gradient index lens (GRIN lens) for use as a collimator lens, Ogawa does not disclose Applicants' recited invention of independent claim 1– "modulating a portion of the emitted light from the fluorescence within the scattering medium using an ultrasonic pulse to induce an acoustic lens to generate a modulated optical signal"- from which claim 3 depends. In particular, the Ogawa

reference does not teach an ultrasonically induced gradient of refractive index, but rather the use of a GRIN lens, which is not ultrasonically induced. Therefore, Applicants submit that the Ogawa reference does not teach or disclose the Applicants recited invention. Furthermore, since the Sfez and Ogawa references alone or on combination do not show the Applicants recited invention, no reasonable combination would be obtainable. Thus, Applicants respectfully submit that claim 3 is patentable over the Sfez and Ogawa references. Therefore, Applicants' respectfully request that the rejection under 35 USC §103 (a) be withdrawn.

With respect to the rejection of dependent claims 10-12 under 35 USC §103(a) over Sfez in view of Nelson, Applicants submit that Nelson does not overcome the aforementioned deficiencies of Sfez. Nelson merely discloses a number of optical imaging techniques for use with scattering media. However, Nelson does not teach or suggest the modulating a portion of the emitted light from the fluorescence within the scattering medium using an ultrasonic pulse to induce an acoustic lens to generate a modulated optical signal as recited in Applicants claim 1. Since neither the Nelson or Sfez references alone or in combination show the Applicants recited invention no reasonable combination would be obtainable. Therefore, Nelson does not overcome the deficiencies of Sfez in reference to independent claim 1 and dependent claims 10-12, and because claims 10-12 recite further inventive features based on claim 1, Applicants respectfully submit that claims 10-12 be allowable and request that the rejection under 35 USC §103(a) be withdrawn.

Applicants respectfully traverse the rejection of claim dependent claim 13 under 35 USC 103(a) over Sfez in view of Schmid. Again, Applicants submit that Schimid does not overcome the aforementioned deficiencies of Sfez. Schmid discloses cross-correlating circuits to reduce noise to obtain an optimal signal. However, Schmid does not teach or suggest modulating a portion of the emitted light from the fluorescence within the scattering medium using an ultrasonic pulse to induce an acoustic lens to generate a modulated optical signal step of Applicants independent claim 1. Since neither the Schmid or Sfez references alone or in combination show Applicants recited invention no reasonable combination would be obtainable. Therefore, Schmid does not overcome the deficiencies of Sfez in reference to independent claim 1 and dependent claim 13, and because claim 13 recite further inventive features based on independent claim 1, Applicants respectfully submit that claim 13 be allowable and request that the rejection under 35 USC §103(a) be withdrawn.

In view of the reasons set out above, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application

are respectfully requested.

Should the Examiner believe that anything further is needed to place the application in condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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